hemorrhage. Unfortunately, the demonstration of early products of hemolysis is of little or no value in differentiating hemorrhage from traumatic technique, since hemolysis often starts in the needle.

The presence of crenation in the red cells present in uncentrifuged spinal fluid is of no diagnostic importance because spinal fluid is normally slightly hypertonic compared with serum. Red cell crenation can occur within minutes in the CSF.

Finally, it is worth mentioning that the presence of bilirubin in the CSF may prove the occurrence of a hemorrhage up to three weeks before examination—long after the blood cells and earlier hemoglobin breakdown products have cleared.

LEONARD J. GOSINK, M.D.

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Subacute Sclerosing Panencephalitis

SUBACUTE SCLEROSING PANENCEPHALITIS (SSPE) is a chronic progressive disease of the central nervous system primarily affecting children of school age. The clinical course can be divided into three stages manifested by behavioral disturbance, dementia, myoclonus and incoordination and ultimately amentia and decerebrate rigidity. Laboratory studies are normal except for an elevated cerebrospinal fluid (CSF) gamma globulin, and the electroencephalogram is characterized by low voltage, slow irregular background activity with paroxysmal bursts of generalized bilaterally synchronous high voltage, slow and sharp waves. Following Connolly's observation that three patients with SSPE had high antibody titers to measles, other laboratories confirmed that elevated serum and CSF measles antibody titers and specific measles immunofluorescence of brain cells were seen in patients with SSPE. Further, paramyxovirus-like particles were demonstrated by electronmicroscopy in brain biopsy of these patients. More recently, the measles virus has been isolated from brain biopsy specimens and lymph nodes of patients with SSPE, suggesting that there has been a suppressed measles infection. Thus far no therapeutic agent has been found to be effective in halting or reversing the disease process. The effects of Transfer-Factor administration are yet to be evaluated.

BRUCE O. BERG, M.D.

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Current Trends in L-Dopa Therapy of Parkinsonism

L-DOPA HAS PROVED to be the most effective treatment available for parkinsonism and is helpful in more than 70 percent of patients. Although relatively little serious toxicity is produced by this drug, almost all patients experience some uncomfortable side effects. Fortunately these seldom necessitate discontinuing the drug, but in about 10 percent of patients intolerance is great enough to prevent use of an optimal dose. Common side effects include gastrointestinal distress (often with vomiting), postural hypotension, impaired cerebration and abnormal involuntary movements. Careful adjustment of dosage and taking each dose with food will often decrease the side effects.

Dopamine, a neurotransmitter of which L-dopa is a precursor, is the substance which is effective against parkinsonism but it does not cross the blood brain barrier well enough to be useful either orally or parentally. For the same reason dopamine formed in the body outside the brain will not be effective. L-dopa, however, is able to enter the brain, where it is converted to dopamine. Decreasing the formation of peripheral dopamine with a dopa-decarboxylase inhibitor such as alpha-methyldopahydrazine, which is also unable to cross the blood brain barrier, al-

lows a larger proportion of the circulating L-dopa to be utilized by the brain in the formation of dopamine. This more efficient utilization of L-dopa permits the use of much smaller doses, which decreases the gastrointestinal distress but does not appreciably diminish the other side effects. Although the dopa-decarboxylases are available at present only for experimental use, the apparent absence of severe toxicity makes it likely that they will be released soon for general use.

Long term maintenance on L-dopa although not usually resulting in decreased control of the symptoms of parkinsonism, may cause the appearance of additional evidences of intolerance. These differ slightly from the side effects occurring early and include abnormal involuntary movements, impairment of cerebration and episodic loss of muscle tone so great and sudden that the patient may fall. Management of these complications requires reduction of the dosage, although frequently the symptoms will reappear after a time at the lower dosage. Discontinuing the drug may be necessary. Although difficult to confirm statistically, it appears that in some cases L-dopa slows or prevents the usual progression of Parkinson's disease.

In summary, L-dopa is very effective in alleviating most of the symptoms of parkinsonism, but its use requires careful adjustment of dosage and close observation of the patient. The use of L-dopa in the treatment of other movement disorders has been, in general, disappointing.

DONALD I. PETERSON, M.D.
GUY M. HUNT, M.D.

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Alpha Rhythms and What They Mean

THE ALPHA RHYTHM is to the brain what the electrocardiogram is to the heart. However, while we know the significance of the latter rather precisely, that of the alpha rhythm remains an enigma. Nevertheless, alpha rhythms (there is one for each hemisphere) are very useful in electroencephalogram diagnosis since they reflect maturational processes and tend to be suppressed by mass lesions such as tumors.

The alpha rhythm closely reflects the state of consciousness and there has recently been great interest in rendering it audible by special electronic monitors. In listening to this alpha rhythm, a subject completes a feedback loop (bio-feedback) and can learn to enhance or suppress this activity. Some have claimed that the process of feedback enhancement represents a special state of consciousness related to meditative experience. There are some indications that these induced states may have therapeutic value in reducing anxiety and tension.

Computer analysis of the alpha rhythm has recently revealed the presence of many unsuspected components in what was formerly regarded as a trivial ten cycle sine wave. These newly demonstrated alpha components may contain information which will provide further insight into brain function.

REGINALD G. BICKFORD, M.B., B.CHIR., F.R.C.P.

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Myasthenia Gravis

DESPITE THE FACT that the conventional anticholinesterase medications such as neostigmine methylsulfate (Prostigmin®), pyridostigmine bromide (Mestinon®), and ambenonium chloride (Mytelase®) continue to be widely used in the management of myasthenia gravis, other modes of therapy must be considered.

It has been shown recently that patients who are relatively refractory to anti-cholinesterase drugs or who cannot tolerate them may respond dramatically to high doses of prednisone (100 mg) administered on alternate days. While the patient is receiving steroids, all forms of anticholinesterase medication must be withheld and the patient must be carefully monitored for possible complications of the disease and steroid